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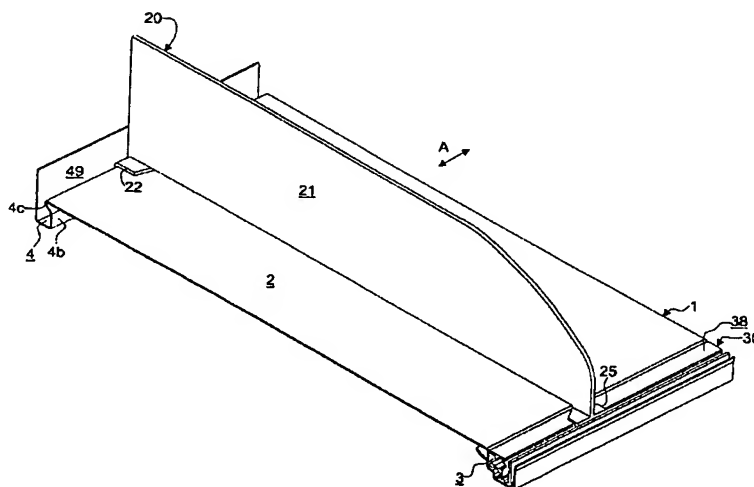
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(54) Title: SYSTEM FOR ATTACHING ACCESSORIES TO A SHELF



(57) Abstract: The invention relates to a system for fixing accessories, such as shelf dividers, feed devices, holders for information carriers etc. to a shelf (1), to which self a number of accessories may be fixed detachably in various different positions along the length of the shelf. The system comprises at least one accessory (20) provided with a foot (24), and a clamping device (30), which comprises a channel element (31), extending in parallel with the longitudinal direction of the shelf and presenting an open longitudinal side (37) for forming an. open channel (36), a actuable holding member, extending along the channel element for holding at least one foot in the channel and a control member (65) for transferring the holding member between a holding position, in which the foot is held in a fixation position in the channel and a release position at which the foot is freed.

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System for Attaching Accessories to a Shelf.

Field of the invention

5 The present invention relates to a system for fixing accessories, such as shelf dividers, feed devices, holders for information carriers, etc. to a shelf, to which shelf a number of accessories can be fixed detachably in various positions along the length of the shelf. The system comprises at least one accessory
10 having a foot and a clamping device, which latter comprises a channel element extending parallel with the longitudinal direction of the shelf and having an open longitudinal side for forming an open channel, an
15 actuatable holding member, extending along the channel element, for holding at least one foot in the channel, and a control member for transferring the holding member between a holding position, in which the foot is held in a fixation position in the channel, and a
20 release position, in which the foot is freed.

The invention also relates to a clamping device and an accessory for such a system, a shelf comprising such a system and a shelf comprising such a clamping device.
25

Background of the invention

30 In general stores, for example, goods are often displayed on shelves. In order to improve the display of the goods and disseminate information and publicity about the goods, a host of different accessories are used, such as shelf dividers, various types of feed devices, holders for flags and other information carriers, various types of goods trays, etc. Such
35 accessories are often fastened to the shelves. The invention is related to the fixing of such accessories to shelves. For the sake of simplicity, the invention is described below with respect to the fixing of shelf dividers to shelves. That which is herein stated about

shelf dividers shall also apply to other types of accessories, such as the aforementioned.

5 Shelf dividers are used, for example, in general stores, in which goods are stored and displayed on shelves. The principal function of the dividers is to separate different categories of goods and create order on the shelves. The shelf dividers are often constituted by partitions which are fastened to the shelf plane so that they extend at right angles to the longitudinal direction of the shelf and jut up perpendicularly from the shelf plane. According to the prior art, the shelf dividers can be fastened to the shelf in a variety of ways, for example mechanically with screws or the like, by frictional engagement or by 15 adhesion with double-sided adhesive tape or the like.

The arrangements which are used to fasten the shelf dividers should have some basic characteristics. One 20 important characteristic is that it should be possible to fasten the shelf dividers in arbitrary positions along the length of the shelf, so that the bays delimited by the dividers can be made any chosen width so as to fit different packagings and quantities of goods. Further, the dividers should be firmly secured 25 to the shelf in order to prevent them from being mistakenly detached or displaced from their intended positions. Especially if a goods feeding device is placed between two shelf dividers, it is important for the shelf dividers not to be moved even marginally closer together, since the friction between the goods and the shelf dividers can then be such that the feed does not work. The holding should also ensure that the dividers are steady, so that they do not tilt. In this 30 connection, it is of great importance that the secure holding is ensured, at the same time as the holding arrangement allows simple attachment and detachment of the shelf dividers. 35

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An especially desirable characteristic is that it should be possible, with a single maneuver, simultaneously to fix a number of shelf dividers to the shelf and to free a number of shelf dividers from the shelf simultaneously, with the same simplicity. An arrangement which allows such simultaneous fixing and release, respectively, of a number of shelf dividers can be used, for example, in the installation of shelf dividers on a new shelf or in the reorganization of the whole or a greater part of the shelf. When shelf-dividers are installed on an empty shelf, the shelf dividers are normally placed first in estimated approximate positions along the shelf, with regard to the goods to be placed on the shelf. The person carrying out the installation usually starts at one end of the shelf and works further along the shelf toward the other end. Approaching the other end of the shelf, it can turn out that there is insufficient space to place a last shelf divider. All previously placed dividers have then to be adjusted by being moved a little way in either direction so as to provide room for the last shelf divider or fill the previously formed free shelf end. In this adjustment work, it is a great advantage if the shelf dividers are not fixed to the shelf, so that they do not have to be detached and refastened. Once the definitive placement of the dividers is realized, it is desirable if all shelf dividers can simultaneously be fixed in their respective positions with a single maneuver. This then ensures, in simple fashion, that none of the dividers tilt, are displaced or come loose from their intended position as goods are introduced.

Even when the shelf is ordered and the shelf dividers are placed in their respective positions, it is sometimes necessary to reorganize the shelf, in which case one or a small number of shelf dividers have to be moved, removed or attached. This is the case, for example, when the distance between two shelf dividers

different dimensions. In order to facilitate such reorganization of parts of an already ordered shelf, it is therefore desirable for individual shelf dividers to be able to be detached and reattached in a new position
5 without freeing other shelf dividers.

Furthermore, the holding arrangements for the shelf dividers should be aesthetically pleasing, should not unnecessarily obstruct goods from being put onto or
10 removed from the shelf or adjoining shelves and should be cheap and simple to produce and fit.

Prior art

15 US 5,657,702 describes a shelf with an arrangement for locking a number of shelf dividers to the shelf. The arrangement comprises a generally U-shaped channel, which is formed in the shelf and extends along the front edge of the shelf, parallel with the longitudinal
20 direction of the shelf. A locking bar is disposed in the channel, parallel with the longitudinal direction of the shelf. The shelf dividers have a cross section in the general shape of an L, the vertical limbs of which constitute the actual divider and the horizontal
25 limbs of which rest against the shelf. One end of the horizontal limb has a downward-curving flange, which is designed to jut down into the channel. The arrangement also comprises members for applying a locking force to the locking bar so that the flange of the divider is
30 locked in place between the locking bar and one of the walls of the channel. To this end, a control member is provided to allow manual actuation of the locking bar between a locking position and a release position.

35 The arrangement described in US 5,657,702 has the advantage that a number of shelf dividers can be secured to the shelf with one and the same locking bar and that all shelf dividers can simultaneously be

locked in place and released by maneuvering of one and the same control member.

5 The arrangement according to US 5,657,702 has also, however, a serious drawback, which makes it especially difficult to reorganize shelves which have already been put in order. Since all the shelf dividers are locked to the shelf when the locking bar is in its locking position, it is not possible to move, remove or attach an individual shelf divider without first freeing all the dividers disposed on the shelf. Those dividers which are not to be moved are also at risk of being displaced from their respective positions, of falling over or of coming completely loose from the shelf. 10 Particularly in the reorganization of ordered shelves on which goods are already set up, this is a serious problem. When a shelf divider is to be moved, removed, or attached, there is a high risk of an adjoining one being touched or displaced. This goods displacement is easily transmitted via tightly packed adjacent goods and can lead to a number of more distant shelf dividers toppling over or being displaced from their intended positions. The whole or a large part of the shelf has then to be reordered, in which case a number or all of the shelf dividers have to be returned to their original positions and the goods put back in place. 15 This is not only a time-consuming and costly exercise per se, but also leads to a reluctance to reorganize already ordered shelves to accommodate new goods and packagings. Consequently, the limited shelf space is not optimally utilized, whilst, at the same time, ill-organized shelves give an unaesthetic impression and adversely affect the tendency of the store customers to select goods from these shelves. 20 25 30 35

A further problem with the known arrangement described above is that the holding of one or more shelf dividers cannot be ensured if the thickness of the flanges of any of the shelf dividers differs from the nominal

production thickness. If one flange is thinner than other flanges, a clearance is formed between this flange and the locking bar, so that the locking force cannot be transmitted to this flange. If, instead, one
5 flange is thicker than other flanges, then a clearance is formed between the locking bar and the other flanges, in which case these receive none or only a slight locking force. A corresponding effect is obtained, of course, if the thickness or straightness
10 of the locking bar vary along its length.

Brief account of the invention

An object of the present invention is therefore to
15 produce a system for fixing accessories to a shelf, which system allows an empty shelf to be put simply in order and, at the same time, enables great flexibility and simplicity in the reorganization of shelf dividers in respect of an already ordered shelf.

20 Another object is to produce such a system which allows individual accessories to be fastened and/or detached from the shelf even when other accessories disposed on the shelf are fixed in their respective positions.

25 A further object is to produce such a system which allows accessories to be fastened and/or detached from the shelf and firmly secured to the shelf even if the members effecting the holding exhibit tolerance
30 deviations from their nominal production measurements.

These objects are achieved with a system of the type specified in the first paragraph of this description, which system exhibits the characteristic features
35 specified in patent claim 1.

The elastic member thus enables individual accessories to be fastened to and/or detached from the shelf without the release of other already fixed accessories.

This substantially facilitates the work on reorganizing an already ordered shelf, since there is no risk of the accessories which are correctly placed being displaced, toppling over or coming loose. Moreover, the elastic member is able to absorb measurement deviations of the holding member and of the feet of the accessories without the risk of any accessory being held with a lower holding force.

Further objects and advantages of the system according to the invention derive from the dependent patent claims 2-14. For example, the holding member can be configured so as, in its holding position, to prevent displacement of the accessories along the shelf. This effectively stops the accessories from being mistakenly dislodged from their intended positions, for example by passing customer trolleys banging against the shelf. Depending on the application of the system, the elastic member can either be disposed on the holding member or on the accessory foot. According to one particular embodiment, the holding member is constituted by an elongated leaf spring, which constitutes the elastic member. Further, the foot and the channel element of the shelf divider can be configured with interacting engagement members, which increase the stability of the accessory and which additionally prevent the accessory from toppling over when it is fixed to the shelf. The interacting engagement members can be configured as a projecting bead arranged on the foot or the channel element and as a corresponding recess in the other part. A particular advantage is herein achieved if the projecting bead is disposed on the channel element and the recess on the accessory foot. Such an arrangement namely prevents improper accessories, which do not have the recess, from being able to be introduced into the channel element and used together with the system. According to one embodiment, the channel element can be configured as an elongated profile element. This allows cheap and simple production of the channel element by

extrusion. At the same time, such a configuration of the channel element allows simple attachment of the channel element to the front edge of the shelf, for example by screwing or by means of double-sided adhesive tape, the system being able to be applied to and used in a host of different pre-existing shelves without special adaptation thereof. Alternatively, the channel element can be fastened in a groove or a recess disposed in the shelf. Although this requires the shelf to be specially configured with such a groove, it simultaneously implies a better integration of the system with the shelf and a more aesthetically pleasing configuration.

The invention also relates to a channel element and an accessory for use with a system according to the invention and to a shelf comprising a system or a channel element according to the invention. The channel element, the accessory and the shelf are defined in the subsequent patent claims 15, 18, and 24 and 25, respectively.

Brief description of the figures

Various exemplary embodiments of the invention are described below with reference to the appended drawings, of which:

Fig. 1a is a perspective view of a shelf provided with a system according to the invention and fig. 1b is a side view of the shelf shown in fig. 1a.

Fig. 2a is a perspective view of an accessory in the form of a shelf divider and fig. 2b is a side view of a shelf divider similar to that in fig. 2a.

Figs. 3 and 4 are detailed enlargements of the shelf divider shown in fig. 2b.

Figs. 5 and 6 shows other embodiments of the detail shown in fig. 4.

Fig. 7 is a perspective view of a clamping device
5 forming part of the system according to the invention.

Figs. 8a and 8b are side views of the clamping device shown in fig. 7, when this assumes different positions for fixing of a shelf divider, the foot of which is
10 also shown in the figures.

Fig. 9 is a side view corresponding to that in fig. 8a and shows another embodiment of the clamping device and the shelf divider foot.
15

Fig. 10a is a perspective view of a holding member according to one embodiment of the invention, fig. 10b is a corresponding plan view and fig. 10c a corresponding end view.
20

Details description of embodiments

Figs. 1a and 1b show a shelf 1 provided with a system according to the invention. In the figures, only a
25 section of the shelf 1 is shown, but it will be appreciated that the shelf extends substantially further in its longitudinal direction, which, in fig. 1a, is indicated by the double arrow A. The shelf 1 has a horizontal shelf plane 2 and a front 3 and a rear 4
30 upwardly open groove, which grooves 3, 4 extend parallel with the longitudinal direction and are depressed in relation to the shelf plane 2. The cross section of the front groove 3 is in the general shape of a U, the rear vertical wall 3a of the groove 3
35 having a shoulder 3b, so that the upper part of the groove 3 is wider than its lower part. The cross section of the rear groove 4 is also in the general shape of a U, the rear wall 4a of the groove 4 being higher than its front wall 4b, which front wall 4b has

a longitudinal bulge 4c projecting rearward into the groove.

5 Figs. 1a and 1b also show a system according to the invention for fixing shelf dividers. The system comprises a shelf divider 20 and a clamping device 30. The shelf divider 20 comprises a divider wall 21, which extends substantially at right angles to the longitudinal direction A of the shelf and which juts up
10 substantially perpendicularly to the shelf plane 2. In the rear bottom corner of the divider wall, a rear foot is fixedly joined to the divider wall 21. The rear foot comprises a horizontal supporting plate 22, which bears against the shelf plane and extends in the longitudinal direction A of the shelf on both sides of the divider
15 wall 21 so as to increase the stability of the shelf divider 20 and help the shelf divider 20 to be able to be placed in upright position on the shelf plane 2 even when the divider 20 is not fixed to the shelf 1. The rear foot 22 also has a downward-curving hook 23, which projects downward from the supporting plate 22 and which grips around the bulge 4c in the rear groove 4 of the shelf 1. The engagement of the hook 23 with the bulge 4 also increases the stability of the divider and
20 prevents the rear end of the shelf divider from being lifted from the shelf plane 2 or displaced along the longitudinal direction A of the shelf. In order further to ensure that the shelf divider rear end is not displaced in the longitudinal direction A, which would mean slanting of the divider 20, the hook 23, the bulge 4c or the shelf plane 2 in the vicinity of the bulge
25 can be provided with a friction-enhancing material. The shelf divider also comprises a front foot 24, which is disposed in the front bottom corner of the divider wall 21 and which will be described in greater detail below.
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In the illustrated example, the clamping device 30 is accommodated in the front groove 3 of the shelf. The clamping device 30 can be fastened in the groove 3, for

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example by press fit, gluing, double-sided adhesive tape or with other fastening members, such as screws, rivets or the like.

5 With reference to figs. 1a, 2a, 2b, 4 and 5, two different embodiments of the front foot 24 of the shelf divider are described below. The front foot 24 has a horizontally disposed supporting part 25, which is intended to bear against a supporting surface 38 of the
10 clamping member 30 and which extends in the longitudinal direction A of the shelf, on both sides of the divider wall 21. The supporting surface 38 of the clamping member is somewhat depressed in relation to the shelf plane 2 and the lower face of the supporting
15 part 25 therefore projects downward to a corresponding degree in relation to the lower edge of the partition wall 21 and the bottom side of the supporting plate 22 of the rear foot (see also fig. 8b, in which the shelf plane is indicated by a dashed line). This depression
20 of the supporting part 25 of the front foot and the supporting surface 38 of the clamping device helps the system to have no parts jutting up above the shelf plane 2. This would otherwise make it more difficult to put goods onto and remove them from the shelf and would
25 adversely affect the overall aesthetic impression given by the shelf and the system. Like the rear foot 22, the supporting part of the front foot 24 increases the stability of the shelf divider 20 and enables the shelf divider 20 to be placed in upright position on the
30 shelf plane 2 even when the shelf divider is not fixed to the shelf 1. This is of particular importance when an empty shelf is being put up, since a number of shelf dividers have to be adjusted to the correct position in relation to one another, it being necessary to move a
35 number or all of the dividers on repeated occasions until the optimal configuration of the distribution of the shelf dividers along the shelf has been attained.

The front foot 24 further comprises a flange 26, which projects downward, perpendicularly from the front edge of the supporting part 25, and which extends parallel with the longitudinal direction A of the shelf. The flange 26 further has engagement members, which are intended to interact with corresponding engagement members of the clamping device 30. In the embodiments shown in figs. 1b, 2b and 4, the engagement members of the flange 26 are constituted by a bead 27, which projects substantially perpendicularly forward from the flange 26 and which extends parallel with the longitudinal direction A of the shelf. In the embodiment shown in figs. 2a and 5, the engagement members of the flange 26 are instead constituted by a groove 28, which is made in the front face of the flange 26 and which extends parallel with the longitudinal direction A of the shelf 1.

With reference to figures 1a, 7, 8a, 8b and 9, two different embodiments of the clamping device 30 are described below. The clamping device 30 comprises an elongated channel element 31, which is constituted by an extruded profile element made of, for example, aluminum or a polymer material. The channel element 31 has a bottom 32, a front side wall 33 and a rear side wall 34. The upper end of the rear side wall 34 is joined to a horizontal upper wall 35, which extends a bit on both sides of the rear wall 34. The bottom 32, and the front 33, rear 34 and upper 35 walls, of the channel element 31 form between them an upwardly open channel 36, the longitudinal opening 37 being formed between the upper end of the front wall 33 and that end of the upper wall 35 which is facing the front wall 33. The upper wall 35 further has an upward-facing supporting surface 38, which is intended to support the supporting part 25 of the front foot 24 of the shelf divider 20.

As described above, the channel element 31 is intended to be received in the front groove 3 of the shelf 1. The front wall 33 of the channel element 31 has for this purpose a distancing flange 39, which is intended to bear against the front wall 3c of the groove 3 (fig. 1b) so as to create a space for the reception and holding of, for example, information plates or a front-end wall which juts up above the shelf plane between the front wall 3c of the groove and the front wall 33 of the channel element. The rear wall 34 of the channel element comprises a longitudinal rearward-projecting portion 40 of generally V-shaped cross section. The projecting portion 40 is received by the groove 3 of the shelf in the space formed in front of the rear wall 3a of the groove above the shoulder 3b.

The bottom 32 of the channel element has an upwardly open spring groove 42 for receiving a leaf spring 50, extending in the longitudinal direction of the channel 36. The cross section of the leaf spring 50 (see figs. 10a-c) has a lower end 51 and an upper end 52 and a convex portion 53 in between. The lower end of the leaf spring 50 is received in the spring groove 42, rotatably about an axis extending along the spring groove 42, parallel with the longitudinal direction of the channel element. The upper end of the leaf spring 50 extends toward the upper wall 35 of the channel element, which upper wall 35 has a downward-projecting stop 35a for holding against the upper end of the leaf spring 50 when the leaf spring 50 is rotated in the direction of the front wall 33 of the channel element. The leaf spring 50 further has a multiplicity of tongues 54, which are disposed one behind the other in the longitudinal direction of the leaf spring. The tongues are separated by intermediate slots 55, which extend from the upper end 52 of the leaf spring a little way down toward the lower end 51, preferably past the convex portion 53.

In the bottom of the rearward-projecting V-shaped portion of the rear wall 34 of the channel element, a longitudinal, substantially cylindrical gully 41 is made. The gully 41 has a longitudinal slot (not shown) facing forward in toward the channel 36 and receives an elongated actuating member 60. The actuating member 60 comprises a front 61 and rear 62 elongated, rod-shaped cylindrical portion, which portions are mutually connected by means of an elongated web portion 63. The rear portion 62 is received in the gully 41, rotatably about an axis extending along the central longitudinal axis of the gully 41. The web portion 63 extends through the slot so that the front portion 61 of the actuating member moves along a circular arc in the channel 36 when the rear portion 62 is rotated in the gully 41. In chosen positions along the channel element 31, at least a substantial part of the rear wall 34 is removed to allow a lever 64, which projects in a general rearward direction from the channel element 31, to be fixed to the rear portion of the actuating member 60. For this purpose, corresponding parts of the rear wall 3a of the front groove 3 of the shelf 1 are also removed to allow the lever 64 to project out of the front groove 3 for manual accessing of the lever 64 beneath the shelf 1 behind the front groove 3. The actuating member 60 and the lever 64 together form a control member 65 for manual actuation of the leaf spring 50.

The front wall 33 of the channel element further has engagement members, which are intended to interact with the engagement members 27 and 28 in the embodiments of the divider foot 26 shown in figs. 4 and 5. That embodiment of the clamping device 30 which is shown in figs. 7, 8a and 8b has an engagement member in the form of a longitudinal groove 71, which is made in the front wall 33 of the channel element parallel with the longitudinal direction of the channel. This groove 71 is intended to interact with a corresponding engagement

member in the form of the projecting bead 27, shown in fig. 4, of the flange 26 of the shelf divider. That embodiment of the clamping device 30 which is shown in fig. 9 has an engagement member in the form of a longitudinal bead 72, which projects into the channel 36 from the front wall 33 of the channel element parallel with the longitudinal direction of the channel. This bead 72 is intended to interact with a corresponding engagement member in the form of the groove 28, shown in fig. 5, made in the flange 26 of the shelf divider.

In figure 8a a shelf divider foot 24 is shown, which is introduced in the channel 36. The control member 65 is in a passive position, whilst the leaf spring 50, which, in the illustrated example, constitutes the holding member of the system, is in a release position. The flange 26 of the shelf divider 1, jutting down in the channel, is not therefore actuated by the leaf spring 50, but can be guided quite freely into and out of the channel and displaced in the channel 36 along its longitudinal direction.

Fig. 8b illustrates how the control member 65 has been guided into its active position. The lever 64 has in this case been guided upward, whereupon the rear portion 62 of the actuating member 60 has rotated in the gully 41 so that the front portion 61 of the actuating member has moved along a circular arc downward in the channel. During this motion, the front portion 61 has come into contact with the leaf spring 50 and forced this into bearing contact, with the convex portion 53, against the flange 26. Upon the continued motion of the control member 65 and the leaf spring 50, the leaf spring 50 has pressed the flange 26 into bearing contact against the front wall 33 of the channel element, the projecting bead 27 of the flange having entered into engagement with the groove 71 of the front wall. The leaf spring has therefore been

guided into a holding position in which the flange 26 is held in a fixation position in the channel. During the motion of the front portion 61 of the actuating member 60 along the leaf spring 50, the leaf spring has
5 been deformed, the front portion 61, and hence the control member 65, being detained bistably in its active position and the leaf spring 50 also being detained in its holding position until the control member 65 is manually returned to its passive position.

10 In the holding position of the leaf spring as shown in fig. 8b, the shelf divider is therefore fixed to the shelf. The clamping force of the leaf spring 50 against the flange 26, and the engagement between the
15 longitudinal bead 27 and the groove 71, prevents the shelf divider from being inadvertently lifted out of the channel or tilted. At the same time, the elasticity of the leaf spring allows the flange 26 to be deliberately brought out of its fixation position in
20 the channel by applying an adequate force to the foot 25 in the obliquely upward/rearward direction. Correspondingly, it is possible to guide the flange 26 of a divider foot 25 into its fixation position in the channel by applying an adequate downwardly directed
25 force to the foot, which force surmounts the spring force of the leaf spring 50.

The configuration of the leaf spring 50 is of particular importance for preventing longitudinally
30 directed displacement of a divider foot 24, which is held in its fixation position in the channel 36. The leaf spring 50 is designed to produce a sufficiently large friction force between the flange 26 and, respectively, the leaf spring 50 and the front wall 33
35 of the channel element to prevent moderate longitudinally directed forces acting upon the shelf divider 20 from generating displacement of the flange 26 in the channel 36. If a large, longitudinally directed force is applied to the shelf divider 20, this

friction force will, however, be surmounted. Since the leaf spring has tongues 54, major longitudinally directed displacements of the flange are, nevertheless, mechanically prevented. The width of the tongues 54 in the longitudinal direction of the channel element can correspond, for example, to about 0.25 - 0.5 times the length of the flange in the same direction. At the same time, the slots 55 forming the interspace between the tongues are narrow. A flange 26 located in its fixation position will therefore be in contact with two to five tongues. Owing to the influence of the actuating member 60 upon the leaf spring 50, those tongues which are beside the tongues bearing against the flange extend in the direction forward toward the front wall 33 of the channel element 30, past the respective end faces of the flange 26. If the flange is displaced in the longitudinal direction, one of the end faces of the flange will therefore come into contact with the side of an adjacent tongue, whereupon further displacement of the flange is mechanically blocked.

A tongued configuration of the leaf spring also means better control over the friction force by which each flange is held in the channel. Each tongue acts almost as an individual spring, so that any dimensional variances amongst individual divider foot flanges does not affect the spring force applied the other flanges. Moreover, material variations along the length of the leaf spring do not affect the spring force of adjoining tongues.

In fig. 9, a shelf divider foot 24 and the clamping device 30 are shown in a position corresponding to that which is shown in fig. 8b. The embodiment shown in fig. 9 differs from that in fig. 8b in that the engagement member of the foot 24 is here constituted by a longitudinal groove 28 made in the flange 26 and the engagement member of the channel element 31 is constituted by a bead 72 projecting from the front wall

33 of the channel element. This embodiment can be desirable, for example, if it is wished to prevent improper shelf dividers from being used in combination with the clamping device 30. In fact, a shelf divider
5 foot which does not have the groove 28 will not be held satisfactorily in the channel when the leaf spring 50 is in its holding position. By configuring the projecting bead 72 with a certain depth in relation to the opening 37 and, at the same time, modifying the
10 characteristics of the leaf spring, it is possible, moreover, to prevent the leaf spring from being guided to its fixation position unless the flange 26 of the shelf divider foot has a sufficiently deep groove.

15 In fig. 6, another embodiment is shown of a shelf divider foot forming part of a system according to the invention. In this embodiment, the elastic member is configured on the flange 26 instead of on the clamping device. In the illustrated example, the elastic member
20 is constituted by an elastic polymer material 80, which extends in the longitudinal direction of the flange and is glued to the flange. In this embodiment, it is possible to replace the leaf spring of the clamping device 30 with a non-elastic holding member (not shown)
25 and still enable the shelf divider foot to be guided into and out from its fixation position in the channel when the holding member is in its holding position.

30 Descriptions have been given hereinabove of a number of exemplary embodiments of the invention. The invention can, of course, be varied within the scope of the following patent claims. In particular, the above-stated concerning shelf dividers also applies to other types of accessories which can be fixed to a shelf,
35 such as, for example, various goods-feeding devices, various holders for advertisement and information carriers, and various types of trays. It is further possible, for example, to configure both the clamping device and the shelf divider foot with elastic members,

should this be desirable. The interacting engagement members disposed on the foot and the channel element can be varied in a number of different ways, for example by providing both projecting members and depressions on both the foot and the channel element. Instead of being disposed in a channel or groove made in the shelf, the clamping device can, for example, be configured for direct fastening to the vertical front side face of the shelf. It is additionally possible for a part of the shelf to form the channel element forming part of the clamping device. Such a configuration of the channel element, as a part of the shelf, can be produced, for example, by bending of a sheet metal shelf, extrusion of an aluminum or plastics shelf, or by injection molding of a plastics shelf. Instead of constituting a separate part, the channel element will then constitute an integral part of the shelf. The invention can also, of course, be applied to non-horizontal shelves.

Claims

1. A system for fixing accessories, such as shelf
dividers, feed devices, holders for information
5 carriers, etc. to a shelf (1), to which shelf a number
of accessories can be fixed detachably in various
positions along the length of the shelf, comprising at
least one accessory (20) having a foot (24) and a
clamping device (30), which latter comprises a channel
10 element (31) extending parallel with the longitudinal
direction of the shelf and having an open longitudinal
side (37) for forming an open channel (36), an actuatable
holding member, extending along the channel element,
for holding at least one foot in the channel, and a
15 control member (65) for transferring the holding member
between a holding position, in which the foot is held
in a fixation position in the channel, and a release
position, in which the foot is freed, characterized by
an elastic member (50, 80) which allows the foot (24)
20 to be guided into and/or out from its fixation position
in the channel (36) even when the holding member (50)
is in its holding position.
2. The system as claimed in claim 1, in which the
25 holding member is configured to prevent displacement of
the foot (24) in the longitudinal direction of the
channel (36) when the holding member is in its holding
position.
3. The system as claimed in claim 1 or 2, in which
30 the holding member comprises an elongated member which
extends in the longitudinal direction of the channel
element (31) and which is disposed in the channel such
that it can be rotated or bent about an axis parallel
35 with the longitudinal direction of the channel.
4. The system as claimed in claim 3, in which the
elongated element is constituted by a leaf spring (50)
constituting the elastic element, which allows the foot

(24) to be guided into and/or out from its fixation position in the channel (36) even when the holding member is in its holding position.

- 5 5. The system as claimed in claim 3 or 4, in which the elongated element has a plurality of tongues (54), disposed one behind the other in the longitudinal direction of the element, which constitute means for preventing displacement of the foot (24) in the
10 longitudinal direction of the channel (36).
6. The system as claimed in any one of claims 1-5, in which the control member (65) comprises an elongated actuating member (60), which extends parallel with the
15 longitudinal direction of the channel (36) and which is disposed rotatably, about an axis parallel with the longitudinal direction of the channel, between a passive position and an active position, in which active position the actuating member (60) bears against
20 the holding member and presses this toward its holding position.
7. The system as claimed in claim 6, in which the control member (65) comprises a lever (64) for manually
25 transferring the actuating member (60) between its passive and active position.
8. The system as claimed in any one of claims 1-7, in which an elastic member (80), which allows the foot
30 (26) to be guided into and/or out from its fixation position in the channel (36) even when the holding member is in its holding position, is disposed on the foot (26) of the accessory.
- 35 9. The system as claimed in any one of claims 1-8, in which the foot (24) of the accessory (20) has a flange (26), which, in the mounted position, juts into the channel (36) and extends parallel with the longitudinal direction of the channel.

10. The system as claimed in claim 9, in which the foot (24) comprises engagement members (27, 28), which are disposed on the flange (26) and which interact with corresponding engagement members (71, 72) disposed on the channel element (31) in order to stabilize the accessory.
11. The system as claimed in claim 10, in which the engagement members of the foot (24) comprise a bead (27) projecting from the flange (26), which bead extends parallel with the longitudinal direction of the flange and, in the mounted position, juts into a corresponding groove (71) present in one (33) of the walls of the channel element (31).
12. The system as claimed in claim 10, in which the engagement members of the foot (24) comprise a groove (28) which is made in the flange (26), parallel with the longitudinal direction of the flange, and which, in the mounted position, receives a projecting bead (72) disposed on one (33) of the walls of the channel element (31).
13. The system as claimed in any one of claims 1-12, in which the channel element (31) has a supporting surface (38), which, when the channel element is mounted on a shelf, is substantially parallel with the shelf plane (2) and somewhat depressed in relation to the shelf plane, and in which the accessory foot (24) has a supporting part (25), which is arranged to bear against the supporting surface without jutting up above the shelf plane.
14. The system as claimed in any one of claims 1-13, in which the channel element (31) is constituted by an elongated molding, which is designed to be fastened to the front edge of the shelf or in a groove (3) formed in the shelf.

15. A clamping device (30) for a system as claimed in any one of claims 1-14, comprising a channel element (30) having an open longitudinal side (37) for forming
5 a channel (36), a holding member, extending along the channel element, for holding at least one accessory foot (24) in the channel, and a control member (65) for transferring the holding member between a holding position, in which the foot is held in a fixation
10 position in the channel, and a release position, in which the foot is freed, **characterized in that** the holding member comprises an elongated element, which is elastic to allow the accessory to be guided into and/or out from the channel even when the holding member is in
15 its holding position.

16. The clamping device as claimed in claim 15, in which the elongated elastic element is constituted by a leaf spring (50), which is disposed in the channel (36)
20 such that it can be rotated or bent about an axis extending parallel with the longitudinal direction of the channel.

17. The clamping device as claimed in claim 15 or 16,
25 in which the elongated elastic element has a plurality of tongues (54), disposed one behind the other in the longitudinal direction of the element, which prevent displacement of the accessory foot (24) when the holding member is in its holding position.
30

18. An accessory for a system as claimed in any one of claims 1-14, comprising a foot (24) having a flange (26), which is designed to jut into an open channel (36) of the system and extends substantially parallel
35 with the longitudinal direction of the shelf (1), **characterized in that** the foot comprises engagement members (27, 71), which are disposed on the flange and which are configured to interact with corresponding

engagement members (28, 72) in the channel in order to stabilize the accessory.

19. The accessory as claimed in claim 18, in which the
5 engagement members of the foot (24) comprise a bead
(27) projecting from the flange (26), which bead
extends parallel with the longitudinal direction of the
flange and is designed to, in the mounted position, jut
into a corresponding groove (71) in one (3) of the
10 walls of the channel (36).

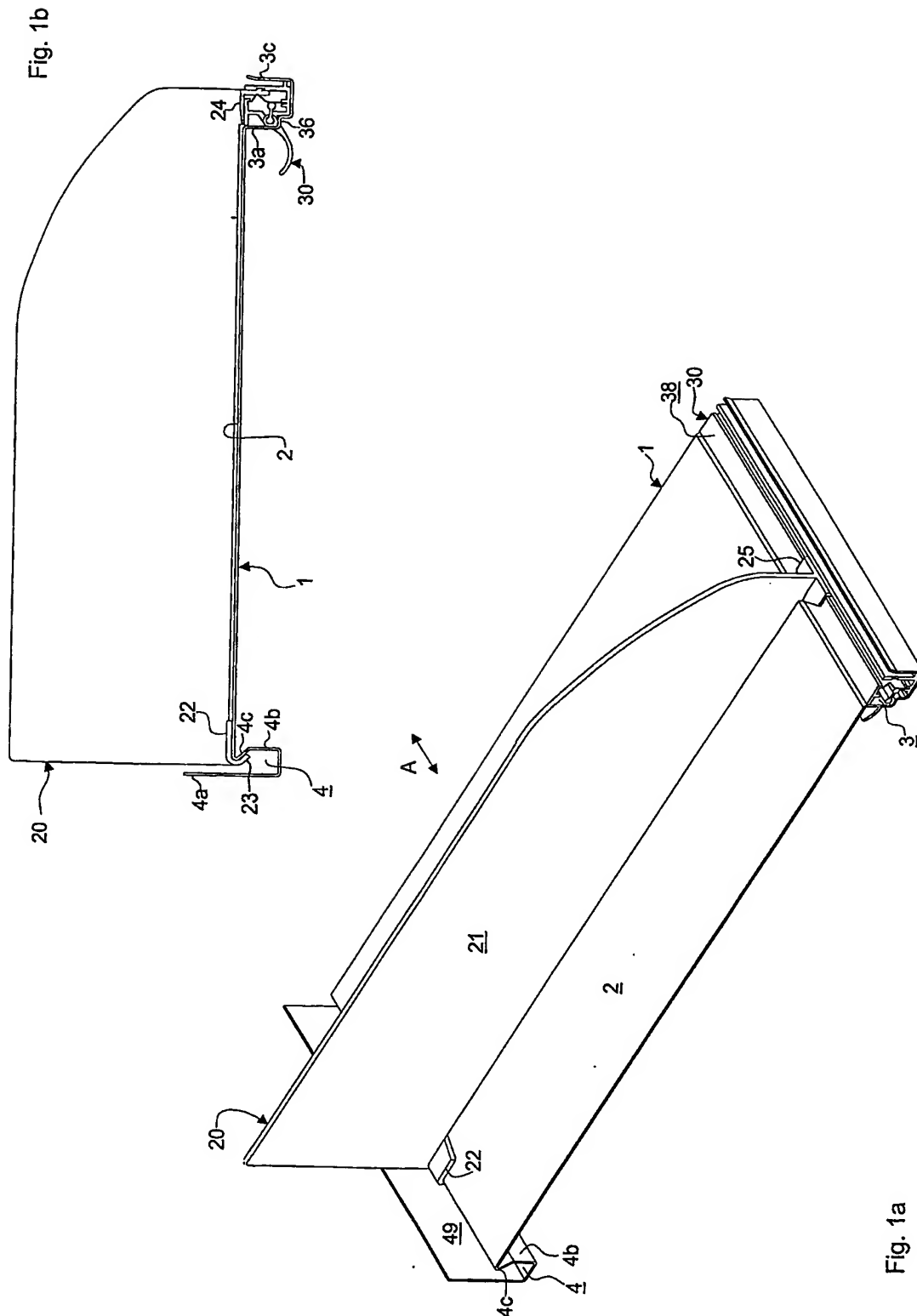
20. The accessory as claimed in claim 18, in which the
engagement members of the foot (24) comprise a groove
(28) which is made in the flange (26), parallel with
15 the longitudinal direction of the flange, and which, in
the mounted position, receives a projecting bead (72)
disposed on one (33) of the walls of the channel.

21. The accessory as claimed in any one of claims 18-
20, in which the foot comprises a supporting part (25),
which projects substantially perpendicularly from the
flange (26) at its upper edge and which is arranged to
bear against a supporting surface (38) on the channel
element (31) without jutting up above the shelf plane,
25 which supporting surface is substantially parallel with
the shelf plane (2) and depressed in relation thereto.

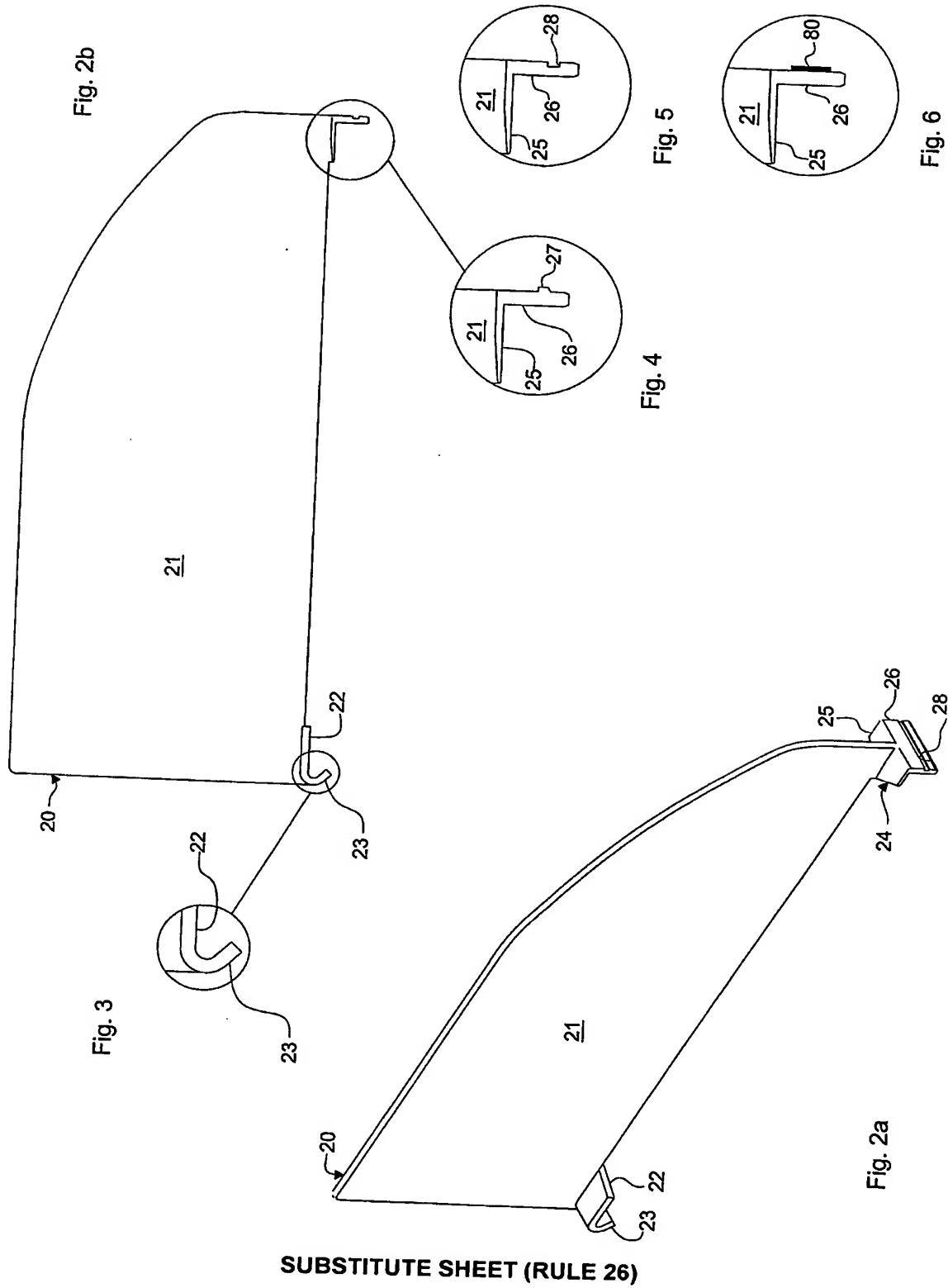
22. The accessory as claimed in any one of claims 18-
21, in which the foot (24) is provided with an elastic
30 member (80).

23. The accessory as claimed in any one of claims 18-
22, in which the accessory is constituted by a shelf
divider (20) comprising a divider wall (21) which is
35 configured to, in the mounted position, jut up from the
shelf plane (2) and extend at an angle to the
longitudinal direction of the shelf (1), the foot (24)
projecting from one of the edges of the divider wall.

24. The accessory as claimed in any one of claims 18-22, in which the accessory is constituted by a feed device.
- 5 25. A shelf comprising a system as claimed in any one of claims 1-14.
26. A shelf comprising a clamping device (30) as claimed in any one of claims 15-17.
- 10 27. The shelf as claimed in claim 25, in which the channel element (31) is fastened to the front edge of the shelf.
- 15 28. The shelf as claimed in claim 25, in which the channel element is received in a groove (3) formed in the shelf.
- 20 29. The shelf as claimed in claim 25, in which the channel element (31) is formed by the shelf.



SUBSTITUTE SHEET (RULE 26)



SUBSTITUTE SHEET (RULE 26)

3/4

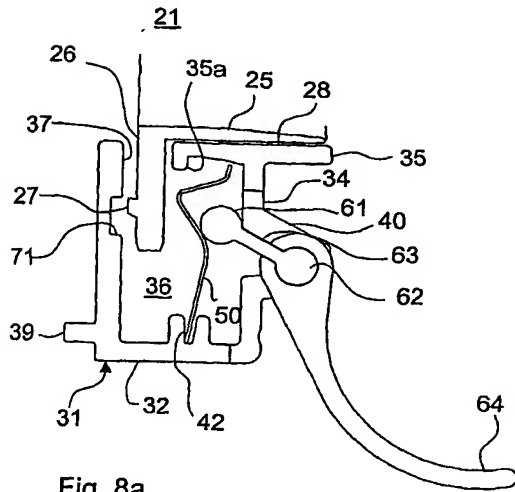


Fig. 8a

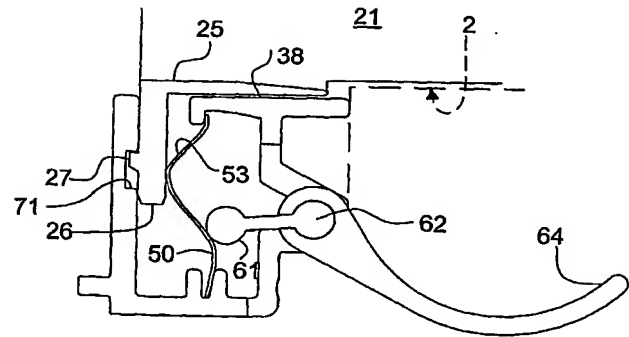


Fig. 8b

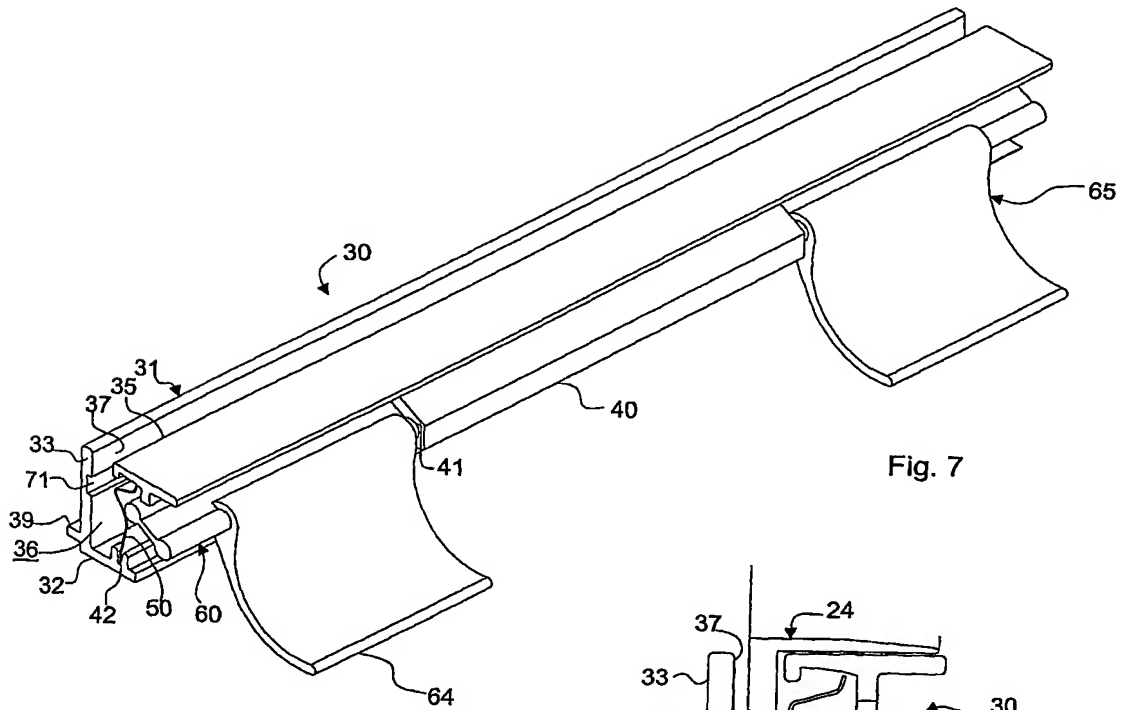


Fig. 7

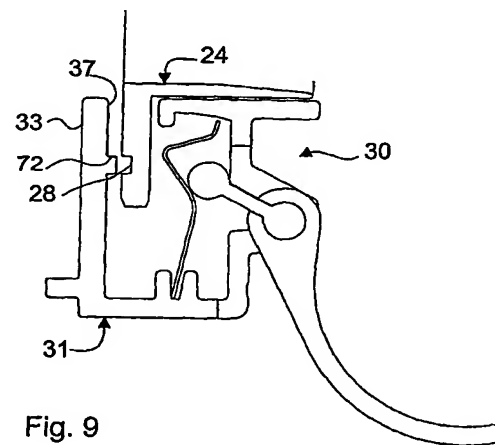


Fig. 9

10/553398

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 2004/000630

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A47F 5/00, G09F 3/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A47F, G09F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
SE,DK,FI,NO classes as above.

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6047647 A (LARAIA, JR.), 11 April 2000 (11.04.2000)	18
	--	
X	EP 0337340 A2 (RTC INDUSTRIES, INC.), 18 October 1989 (18.10.1989), column 4, line 22, figure 3	18
	--	
X	US 4615276 A (GARABEDIAN), 7 October 1986 (07.10.1986)	18
	--	

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"B" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
14 July 2004Date of mailing of the international search report
15-07-2004Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 2004/000630

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0320858 A1 (SCHENK, WERNER), 21 June 1989 (21.06.1989), figure 3	18
A	--	1-17,25-29
A	US 4775058 A (YATSKO), 4 October 1988 (04.10.1988)	1-29
A	US 5673801 A (MARKSON), 7 October 1997 (07.10.1997)	1-17
A	FR 2682209 A1 (SOCIETE a RESPINSABILITE LIMITEE: VISIOPLAST), 9 April 1993 (09.04.1993)	1-17
	-- -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2004/000630

Box No. II Observations where certain claims were found unsearchable (Continuation of Item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

.../...

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2004/000630

Box No. IV Text of the abstract (Continuation of Item 5 of the first sheet)

The subject defined by the problems and their means of solution, as listed below are so different from each other that no technical relationship or interaction can be appreciated to be present so as to form a single general inventive concept:

1. A system to fix fittings, a clamping device and a shelf in accordance with claims 1-15 and 25-29
2. Fittings in accordance with claims 18-24

INTERNATIONAL SEARCH REPORT

Information on patent family members

30/04/2004

International application No.

PCT/SE 2004/000630

US	6047647	A	11/04/2000	CA	2327257	A	10/08/2000
				WO	0045669	A	10/08/2000
EP	0337340	A2	18/10/1989	US	4830201	A	16/05/1989
US	4615276	A	07/10/1986	NONE			
EP	0320858	A1	21/06/1989	SE	0320858	T3	
				AT	73306	T	15/03/1992
				DE	3869085	A	16/04/1992
				DE	8716470	U	11/02/1988
				ES	2030833	T	16/11/1992
US	4775058	A	04/10/1988	NONE			
US	5673801	A	07/10/1997	NONE			
FR	2682209	A1	09/04/1993	NONE			